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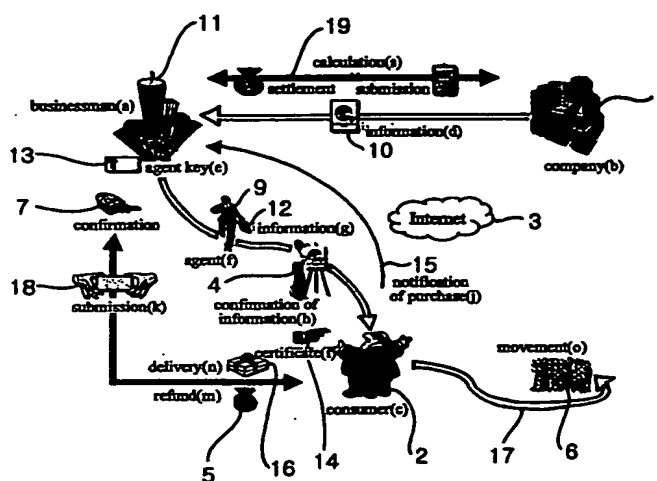
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(54) Title: **INFORMATION PROVIDING METHOD HAVING AUTHENTICATION AGENT ON INTERNET AND EMBODYING SYSTEM THEREFOR**



(57) Abstract: Disclosed are an information providing method and an embodying system thereof for authenticating in place of an information consumer under a security maintaining condition without exposing the information consumer's private information through an authentication agent having information contents and an authentication key as a software agent. In network and Internet environments, when refundable advertisement is provided, the present invention provides a system for authenticating in place of the information consumer without demanding to open the consumer's private information to the public. Therefore, without any burden, the information consumer receives and circulates refundable or payable information or purchases goods, thereby obtaining cash or goods as costs of accumulated consumption of the refundable information. An information provider and a mediator can transact business with each other through objective information supply and measurement of consumption rate.

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**INFORMATION PROVIDING METHOD HAVING  
AUTHENTICATION AGENT ON INTERNET AND  
EMBODYING SYSTEM THEREFOR**

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**BACKGROUND OF THE INVENTION**

**Technical Field**

The present invention relates to an information providing method having authentication agent on Internet and an embodying system therefor. More particularly, the method and system can increase a coefficient of utilization of information contents by allowing an unspecified number of information consumers to expose information contents. The information contents are transmitted with an authentication agent to the consumers through a software authentication agent. The authentication agent authenticates in place of the information consumers, using an authentication key hold therein, in a state that the consumers' anonymity is secured. Moreover, the method and the system can induce information providers such as companies to request to provide much information by exactly totalizing the number of exposed information. Furthermore, the method and the system can raise the information consumers' interest in utilization of information by circulating the authentication agent on a network.

**Background Art**

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The current Internet business is divided into four types. One is an Infra, which makes to use an Internet, applied to Internet connecting services, networks, computers or security equipments. Another is an Application for

manufacturing and providing solutions such as ASP (Application Solution Provider) services and software such as search engines. Another is an Intermediary, which constructs and intermediates to show various information and contents on the Internet, containing a portal service, contents provision, Internet advertisement, Internet settlement and authentication business. The other is an Electronic commerce such as Internet shopping malls.

The Infra business is mostly selling and construction businesses based on hardware (H/W), and a huge communication base called Internet has been the main element in business expansion due to the public benefit of media. Especially, a WWW (World Wide Web) area on the Internet utilizing a document language format of an HTML(Hyper Text Markup Language) based on a communication protocol called an HTTP(Hyper Text Transfer Protocol) has been explosively developed due to appearance of a web browser. In consideration of this condition, the communication basis of the Internet is not fixed. Therefore, there have been various trials to expand application areas of the Internet such as an Intranet for utilizing the Internet in a secured condition and a VPN(Virtual Private Network), which does not use public protocols. The growth of the Internet infra still requires appearance of effective ideas to make more effective Internet infra. Especially, a demand of the solution of the problems in Internet traffic, which is not smooth, is gradually increased.

Moreover, the Intermediary business acts as an agent for information consumers to all shopping needs occurred between information providers and the information consumers. However, the Intermediary business is more effective and inexpensive than real human agents. There is the Internet advertisement as a representative business model in this field executed in the Intermediary business. The Internet advertisement is provided by portal sites,

virtual associations, dealing integrators. Banner advertisement on the portal site (for example, Yahoo or Goldbank) is to lead the information consumers to visit the portal sites of the various Internet sites by providing contents effective for the information consumers. The information consumer can access  
5 anonymously, but the degree of concentration to advertisement is lowered because the information consumers search only desired contents. Therefore, the banner advertisement on the portal site is provided with deteriorated consumer information and cannot form a reliable relationship. Moreover, there are e-mail advertisement and transfer type advertisement provided by the virtual  
10 associations (for example, Motley Foll, E-loan, etc.). In this case, as being based on secured member information, the advertisement has a high reliability and can advertise selectively. However, various ways must be mobilized to obtain member information and private information, which the information consumers may be unwilling to provide, is demanded, and thus the relationship  
15 with the consumers is formed in a restricted area. Finally, the dealing integrator based on selling (for example, AutoBYTEL, Amazon.com, etc.) provides products and information required by the information consumers to induce the selling. The dealing integrator does not have the reliable relationship in that the information consumers are not provide their private  
20 information, but has excellent concentration degree to the advertisement and connecting function between providers and the information consumers for dealing purpose.

However, in case of intermediating refundable information for returning profit to the information consumers, all the above Internet advertisement types  
25 require computation of how many times the consumers access and an authentication system for returning profit to the information consumers to make

companies, who are sponsors of refundable information, recognize the value of the site. For the computation, there are only two methods. That is, a method is that the information consumer provides private information to the site to register as a member of the site. The other method is that the information consumer clicks using a mouse, which is a device of the information consumer, on online to notify using a user ID and a secret number that the consumer confirms the provided advertisement and then the site of the information agent checks and measures it. Such advertisement and information providing refundable value can be provided only by the Internet. However, there is a restriction because the information consumer is unwilling to expose private information and the sponsor can not exactly determine the information consumer due to member information having forged private information.

For example, as shown in FIG. 1, in case of a conventional member registration transfer type advertisement based on the number of registered members, the refundable advertisement may be confirmed by a way that the information consumer 102 directly searches the web site, which provides the refundable advertisement operated by an ad company 101, using tools such as a web browser and confirms 104 the refundable advertisement. Alternatively, the refundable advertisement may be confirmed by a way that the web site transmits the refundable advertisement to the information consumer 102 through e-mail. To obtain compensation, such as cash, cyber money or products, as the cost to the confirmation of the refundable advertisement, private information of the information consumer 102 is required because the ad company must know who the information consumer 102 is. Therefore, the information consumer must register as a member for providing private information to obtain the refundable information service. However, such member registration procedure demands

excessive private information and the private information may be flown out or misappropriated. Furthermore, reliability of member information wholly depends on the consumer's will, and thus it is difficult to grasp the exact number of members.

5           Additionally, in the Intermediary business field, as a business model intermediating refundable information, the CygerGold Company, which has been filed in U.S. patent no. 5,794,210, may be referred. Alternatively, as a business model allowing the information consumer to participate as the main body in flow of information and value on the basis of two-way Internet, U.S patent no.  
10   5,794,207 by CostLine, which is related to reverse auction intermediating to use sellers on the consumer side, may be referred. However, such business models cannot effectively provide refundable information and cannot authenticate the settlement of information utilization without the information consumer's member registration. Moreover, it is difficult to accurately compute the  
15   number of exposed information recognized by the sponsor.

That is, for example, in case of a conventional later-recommendation compensation method shown in FIG. 2, if the information consumer 102 registered as a member of the ad company 101 invites 107 a new information consumer 106 to register as a member, when the new information consumer 106  
20   registers 103 as a member of the ad company 101 and confirms advertisement of the ad company 101, the new information consumer 106 can obtain compensation 105. At this time, if the information consumer 106 notifies who recommends him/her when registering as a member, also the recommender 102 obtains benefit 108 as a compensation of the recommendation. However, in  
25   such compensation system, there is a problem that it is not certain whether or not the new consumer 106 registers the information consumer 102 as the

recommender.

Meanwhile, in an electronic commerce field, which is a business model for dealing goods and products between companies, between the company and a government office, between the company and the consumer or between the consumers, the companies and the consumers are informed through various promotions to each other. Generally, the electronic commerce is based on the Internet web site, which is intensively managed at the center on the basis of scale-up connection environment. When, the site displays information and costs of various products and goods for transactions, the consumer puts desired goods into a basket constructed with software, inputs the consumer's account number to calculate the costs and receives the goods through an appropriate material flow system. Such sites for transactions have various methods for concluding the transaction. Recently, a transaction method of intermediating to select desired goods by emphasizing specialty of the goods or by comparing the same goods on separate sites has been disclosed. However, in such methods and systems for the electronic commerce, the consumer must shop at least one or more sites to find the desired goods, and therefore, there is a trouble that the consumer must perform web surfing on various web sites for a long time.

Conventional techniques in software field are commonly known and have been developed as a client/server system including program objects fixed and executed in a fixed position of the network and agent objects executed for representing a specific purpose in a memory of a single device or through a network communication system between various devices. The current Internet may be a large client/server system. However, most of agent objects are operated while interchanging data with other device on the network in a fixed place of a service provider system. The service provider system is called a

server between the various devices on the network, or a service receiver device called a client. If the agent objects move other place on the network, the agent objects can be distributed from a planned service server like the time that related programs are initially installed for a certain service. However, the agent is not  
5 moved for itself by a prepared functional method during process of the agent in a device having a CPU(Central Processing Unit). Only unchangeable program objects are distributed by another server, client or user through a previously prepared service process in the server and can be executed in the distributed place.

10 For example, a Java applet for executing active representation and function on the web browser is well known. The Java applet is program object executed in the client operated in a device, in which an interpreting engine called Java machine for understanding and operating Java OS, which is a program language patented and spread by Sun Microsystems, Inc. However, as also the  
15 distribution execution of such program objects may damage the system, the program objects move to the place confirming the security through a secured method. Therefore, the Java machine previously blocks the execution, which will damage the system, and represents authentication of it.

Moreover, program objects (OCX), which can be executed under the  
20 basis of a DCOM(Distributed Component Object Model) provided by Microsoft Company, can be distributed through web. If manufacturers manufacturing the program objects issue a guarantee of the program objects, the user recognizes it and installs and executes the program.

The authentication method of such program object movement is possible  
25 between systems, in which technique infrastructure including the provided communication protocol and having security is installed. The program object



has been expanded into the agent object for representing function on the network and, especially, on the Internet. The agent object determines its position movement and moves for itself. The operation in the moved place cannot be performed by the communication protocol commonly used on the Internet. In  
5 consideration of it, IBM has researched new protocol for network Infra, in which the agent objects act, and obtained patent right of U.S. patent no. 5,603,031. However, there is a problem that it is not easy to generalize such network infra in the huge Internet environment. IBM has searched a system, which includes an Intranet having a VPN(Virtual Private Network) as the protocol and which  
10 utilizes agent object in a specific area smaller than the Internet, and filed a Korean patent application no. 1998-086624. Additionally, various systems and methods of application and construction of agent objects have been patented (U.S. patent no 6,016,393) by the General Magic Company. However, in the above methods of applying the agent objects, it is difficult that the agent moves  
15 as the main body under the opened Internet condition and guarantees the security or authenticates in place of the user.

### **Disclosure of Invention**

20 Therefore, it is an object of the present invention to provide an information providing method having authentication agent on Internet and an embodying system therefor, which can lead more information consumers to use various information provided from an information agent and more exactly compute the number of exposed information by allowing an unspecified number  
25 of information consumers to expose information contents. The information contents are transmitted with an authentication agent through a software agent called authentication agent. The authentication agent authenticates in place of

the information consumers with an authentication key hold therein, in a state that the consumers' anonymity is secured and by exactly totalizing the number of information exposure.

5 It is another object of the present invention to provide an information providing method having authentication agent on Internet and an embodying system therefor, which can maximize efficiency of the consumer's advertisement exposure and an advertiser's advertisement attraction by raising degree of diffusion and concentration of advertisement if the information is advertisement and raising degree of accuracy in computing the number of advertisement.

10 It is a further object of the present invention to provide an information providing method having authentication agent on Internet and an embodying system therefor, which can authenticate compensation to advertisement confirmation in case of refundable advertisement and settlement to goods purchase in case of payable advertisement through the authentication agent  
15 without additional procedure.

It is a still further object of the present invention to provide an information providing method having authentication agent on Internet and an embodying system therefor, which can allow an information consumer, who uses various information including advertisement through the authentication agent, to  
20 provide the corresponding information to other information consumer through the authentication agent. Thereby the information consumer can act as the main body of information flow.

It is another object of the present invention to provide an information providing method having authentication agent on Internet and an embodying  
25 system therefor, which can induce the positive purchasing promotion without the need that the information consumer goes about the wide network such as the

Internet to find desired information or advertisement by directly transmitting information or advertisement to the consumer through the authentication agent. Moreover, the method and the system can improve a movement speed of the authentication agent and reduce traffic of the Internet in itself by allowing to  
5 circulate the authentication agent using an exclusive network without using the Internet.

Finally, it is an ultimate object of the present invention to provide a software agent authenticating in place of the information consumer and recognizing and demonstrating the existence and valuable act of the information  
10 consumer. For this, provided are technical method and system for embodying an agent including software representing and authenticating the information consumer and a system moving the software agent as the main body and securing the software agent under an open environment such as the Internet when the software agent is installed and utilized.

15 According to the present invention, the use of the authentication agent can considerably reduce network traffic generated during information transmission between a server and a client through a web browser.

The present invention provides a stable technical method of utilizing the software agent even in the open environment such as the Internet by making the  
20 software agent called the authentication agent have an authentication key.

According to the present invention, a gene key, which is the authentication key transmitted to the consumer through the authentication agent, can be recognized as a securable authentication system reliable between the information consumer and an information mediator. The information mediator  
25 is a provider of the authentication agent and be utilized as reliable value compensation standard of information consumption or information transmission.

According to the present invention, the information mediator can exactly grasp the flow and consumption route of information, thus obtaining exact profit producing standard of the information provision.

5 According to the present invention, the consumer, who is the main body in consumption and circulation of information, can consume and circulate information in a state that the consumer's private information is exposed to a minimum.

The present invention can allow the information consumer to be active as a consumer and a seller in vender, thus expanding a width of employment.

10 The present invention can rapidly circulate information with an inexpensive cost, thus establishing an effective selling method.

According to the present invention, as the information consumer opens information to the public voluntarily, the consumer can manage personal knowledge and the vender promotes a selling efficiency.

15 The present invention can construct effective Infra for transmitting effective contents to the information consumer.

The present invention can be changed, converted, replaced and substituted within a range of the business model, technical method and system and is not restricted in the above.

20

### **Brief Description of the Drawings**

Further objects and advantages of the invention can be more fully understood from the following detailed description taken in conjunction with the  
25 accompanying drawing in which:

FIG. 1 is a block diagram of a conventional compensation method of a member registration transfer type advertisement for compensating advertisement

confirmation on condition of member registration;

FIG. 2 is a block diagram of a conventional later-recommendation compensation method for compensating recommendation of other information consumer on condition of member registration;

5        FIG. 3 is a block diagram of a compensation method of an agent transfer type advertisement for compensating advertisement confirmation through an authentication agent according to the present invention;

FIG. 4 is a block diagram of an advance-recommendation compensation method for compensating recommendation of other information consumer  
10        through the authentication agent according to the present invention;

FIG. 5 is a block diagram explaining an information transmitting method using a network that information requested by a businessman is transmitted to an information consumer through an authentication agent and the authentication agent authenticates confirmation of information in place of the information  
15        consumer to compensate to the information consumer;

FIG. 6 is a block diagram of a structure of the authentication agent, which is a software agent provided as an information circulating agent, according to the present invention;

FIG. 7 is a block diagram of a flow of the authentication agent, which is  
20        the software agent provided as the information circulating agent, according to the present invention;

FIG. 8 is a block diagram of a structure and a flow of an authentication agency, which is a software utility provided as an information circulating agent, according to the present invention;

25        FIG. 9 is a block diagram of a structure and a flow of an authentication center, which is a system provided as an information mediator according to the

present invention;

FIG. 10 is a block diagram showing a comparison of a direct manufacture and supply agent method that a template authentication agent is manufactured and provided by an information provider through a distributed manufacturing tools and an indirect manufacture and supply agent method that the template authentication agent is manufactured and provided by information mediator;

FIG. 11 is a view of the authentication agency according to a preferred embodiment;

FIG. 12 is a flow chart showing a process for manufacturing and providing the authentication agent by combining the template authentication agent and an authentication key data of a control DB;

FIG. 13 is a block diagram comparing three methods for transmitting the authentication key and information to the information consumer;

FIG. 14 is a view showing an example that the authentication agency is executed in the information consumer's computer;

FIG. 15 is a flow chart showing a process of operating the authentication agent transmitted to the information consumer and a process of manufacturing and providing a new authentication agent through recommendation from an authentication center;

FIG. 16 is a view of the authentication agent according to a preferred embodiment; and

FIG. 17 is a flow chart showing a process of performing settlement after confirming the authentication by the authentication key provided from the information consumer.

### **Best Mode for Carrying Out the Invention**

The present invention will now be described in detail in connection with preferred embodiments with reference to the accompanying drawings. For reference, like reference characters designate corresponding parts throughout several views.

5       The present invention provides an information providing method of representing an information consumer in authentication in a security maintaining condition through an authentication agent having information contents and an authentication key as a software agent without exposing the information consumer's private information, when an information mediator provides the  
10 information consumer with information contents requested from an information provider.

Referring to the drawings, according to a preferred embodiment applied to advertisement, a method for providing information on an Internet having authentication agent and an embodying system thereof will be described as  
15 follows.

First, as shown in FIG. 3, a case that the present invention is applied to a transfer type advertisement what is called agent transfer type advertisement will be described. When an ad company 1 transmits refundable advertisement to the information consumer 2 through e-mail using the authentication agent 9, the  
20 software authentication agent 9 represents the information consumer 2 in testifying that the information consumer 2 confirms advertisement. Here, the authentication agent 9 is the software agent invented according to the present invention and the information consumer 2 confirms it, Thus, the information consumer 2 can obtain cost 5 of consumption of refundable advertisement  
25 without burden of outflow of private information and the authentication agent 9 can perform confirmation of member. Furthermore, as shown in FIG. 3, the

present invention can perform agent transfer type advertisement. At this time, as shown in FIG. 4, the present invention takes advance-recommendation compensation when a new member is registered. That is, when the information consumer 2 sends the software authentication agent 9 containing advertisement  
5 to a new information consumer 6 through e-mail and the new information consumer 6 confirms 4 it, the software authentication agent 9 promptly notifies the ad company 1 of who is advertisement recommender 2 and who is consumer 6 in place of the information consumers 2 and 6. Then the ad company 1 gives benefits 5 and 8 to the consumers. Therefore, this flow is a way that the cost of  
10 act of the recommender 2 is first guaranteed.

The refundable agent transfer type advertisement and advance-recommendation compensation are possible through the authentication agent according to the present invention. Through the transfer type advertisement shown in FIG. 3, roles of the authentication agent in the information providing  
15 method of the present invention will be described in more detail as follows.

As shown in FIG. 5, there are the company 1, which provides information for advertisement of products or goods or for selling or information source 10 for search, the information consumer 2, who consumes and circulates the information and information source finally, and a web site operator 11, who  
20 intermediates such information and information source on a network such as the Internet according to the information providing method of the present invention. The company 1, who is a sponsor providing the information source 10, provides the information mediator 11 with original information source 10. The information mediator 11 provides refundable and payable information 12 to the  
25 information consumer 2 through the agent 9 (for the convenience, in this point, the agent 9 is considered as a man) without the demand of information such as



member registration. Because the agent 9 is employed to the information mediator 11, a proper authentication key 1, which has a clear discrimination property like a fingerprint or a gene, and a unique discrimination symbol of the agent 9 are recorded and stored to the information mediator 11. Therefore, the agent 9 performs the discrimination of private information, which the information consumer 2 is unwilling to expose, in place of the information consumer 2. After that, the agent 9 finds the initial information consumer 2 informed by the information mediator 11(in fact, recommended by the former information consumer). When the agent 9 meets the information consumer 2, the information consumer confirms 4 the refundable (e.g. advertisement) and payable (e.g. purchase) information provided from the agent. At this time, the agent 9 leaves a certificate 14, which includes the authentication key 13(fingerprint or gene) and the visit number of the agent in an account book or a depository managed by the information consumer 2. Moreover, the agent 9 records the fact, that the information consumer confirms the provided information, in a recordable medium, and the contents recorded in the medium are the agent's authentication key 13 and the visit number notified to the information consumer. At the same time, the agent can notify the discrimination symbol representing the agent's authentication key 13 or authentication and the visit number to the information mediator 11 through a purchasing notification 15 by using a communication device communicated with only the information mediator. Especially, at this time, if confirming payable information, the information consumer 2 notifies information of purchased product delivery 16 to the agent 9 and the agent notifies information of the purchased product delivery 16 to the information mediator 11.

Meanwhile, if the information consumer 2 recommends another

information consumer's e-mail to the agent 9, the agent 9 moves 10 to the recommended information consumer. At this time, the agent adds and stores a next visit number. In such manner, the agent 9 moves to an extent of the initially fixed visit number, or repeatedly moves before the movement is stopped  
5 through communication with the information mediator 11 or until the information consumer 2 recommends no more. Meanwhile, the information consumer 2 takes out the authentication keys 13 and the visit numbers, which many agents have left, from the account book or the depository and submits to the information mediator 11 in bulk or separately. The information mediator  
10 compares and confirms 7 each agent's authentication key 13 and visit number with previously recorded contents to know the agent's authentication key 13 and visit number are correct. Then the information consumer 2 can obtain refund 5 up to a value (like cash) of the provided refundable information. The information mediator 11 can provide the company 1 with the number of agent  
15 authentication provided 18 by the information consumer 2 or with the number previously notified by the agent 9 as the exact number of exposed information, and perform the corresponding computation 19.

Through the authentication agent 9 according to the present invention, when the information consumer 2 meets and circulates information, especially  
20 refundable information 12, through the agent 9, the business model can be carried out without demanding any private information not opened to the public. For your understanding, in this specification, the authentication agent 9 is set and described as the man agent.

When the business model is carried out in the Internet environment, the  
25 authentication agent must perform to be fit for the purpose by moving and communicating through the network. The agent is operated in the information

consumer's device such as a computer connected to the network. To have the same functions as the agent in the device, the authentication agent, which is the software agent according to the present invention, must be embodied through software and systems. The software and the systems have to be accepted by those skilled programmers in the art, the programmers sufficiently understanding the following steps. Through the above process, the objects of the present invention will be processed successfully.

As shown in FIG. 6, the authentication agent 9 includes a data division 20 having two data and a function part 21 having three functions. The data division 20 includes a gene key 13 (for convenience, represented as the gene key because having the same property as the gene of human) serving as the authentication key and information contents 12. The gene key 13 is a series of data aggregate for demonstrating uniqueness given when the software authentication agent 9 is generated from a central authentication data center 30 shown in FIG. 7. The gene key 13 is contained in the software authentication agent 9 and separated only when the information contents 12 is consumed. The central authentication data center 30 records which software authentication agent 9 contains the gene key 3. If the agent's unique data and information value included in the data division 20 are refundable, the gene key 13 holds index for verifying how much value the data and information have. A method for recognizing and utilizing the keys as original data without damage will be described in more detail later. Another data is information contents 12, such as advertisement or research, which is transmitted and recognized to the information consumer by the software authentication agent 9. The information contents 12 are divided into refundable information and payable information.

The function part 21 includes a display part 22 for displaying

advertisement or research, a separate processing part 23 reproducing and generating the gene key 13 and recording the gene key 13 into the information consumer's storing device, and a communication processing part 24 for communicating with the authentication center 30, which sends the authentication agent 9. The display part 22 of the function part 21 displays formatted data, such as HTML, GIF, AVI, etc., hold in a data area to the information consumer. The gene key reproduced, generated and recorded by the separate processing part 23 is used as means for allowing the information consumer to request refund to the information provider or for submitting for authentication of purchase.

Referring to FIG. 7, a method for processing service of the software authentication agent will be described as follows. First, the software authentication agent 9 is transmitted from the central authentication data center 30 to the information consumer through the Internet 3 in the form of e-mail 31. Alternatively, the information consumer can download the authentication agent 9 from a web site operated by the authentication center. At this time, the information consumer's e-mail address may be one of e-mail addresses recommended from the former information consumer. The transmitted authentication agent 9 is operated in the information consumer's computer by the information consumer's reading order 34, shows the stored information contents 12 such as refundable and payable information to the information consumer and makes the information consumer to confirm 35 it.

At the same time with the confirmation 35, the progress of the software authentication agent 9 is divided into two ways. First, the gene key 13 of the software authentication agent 9 is generated 39 by the reproduction 37 and recorded 40 in the information consumer's memory. The reproduced and generated gene key 39 is exchanged into cash 43 or products if the information

consumer, who wants to receive refund, provides a settlement 42 with required information, such as bank accounts or address, to the web site 41 operated by the central authentication center 30. At this time, the use of the gene key is recorded into the authentication center 30, and thus duplication of the settlement  
5 is prevented. After the information contents is confirmed, in another progress, the gene key 13 with address data for moving to recommended information consumer 6 shown in FIG. 5 and address data for moving to a camp called an authentication agency are transmitted to the authentication center 30 through the communication processing part 24 shown in FIG. 6. The authentication agency  
10 is provided as a preferred embodiment of the present invention, for moving the software authentication agent 9 in an exclusive communication method. The authentication center 30 transmits a new software authentication agent having such gene key 13 and address to a new address. After that, the same flow is applied to the next information consumer.

15 In other words, the information consumer can recommend new information consumers for obtaining costs of the information circulation by inputting e-mail address of the new consumers to the authentication agent. The authentication agent moves to the new consumer according to the movement method provided in this invention. The movement of the authentication agent  
20 according to the present invention is different from a transfer of e-mail attached file through a function such as duplication by e-mail system processing tools and operating system usable by the information consumer. If the authentication agent is moved through the transfer of the e-mail system, it will bring about a result that the information consumer transfers the refundable certificate to other  
25 information consumer. However, the communication function of the authentication agent according to the present invention can solve the above

problem because the information mediator can confirm whether or not the movement is performed from the authentication center in a right method. The reason is that movement procedure is effectively performed through a support system of the authentication center, which will be described later, when the authentication agent moves to the new consumer's address using the communication function hold in the authentication agent. In other words, the movement of the authentication agent is performed in such a manner that the authentication agent sends the agent's gene key with the new consumer's address to the authentication center and the authentication center generates a next authentication agent through the gene key and sends the new authentication agent holding the new gene key to the new consumer's address. Finally, because knowing the gene keys of all generated authentication agents, the authentication center can prevent the duplication of the authentication keys when the authentication agent generates the gene key, i.e., authentication key for demonstrating its refundable value or in a proper condition capable of communicating with the authentication center. Moreover, the authentication agent operated by the unsuitable movement of the authentication agent is stopped in providing the gene key.

The gene key of the authentication agent according to the present invention is data testifying its uniqueness like the human's authentication (fingerprint and gene). However, because data duplication in the computer may be easily performed, to testify the uniqueness like the human's authentication, an unduplicated method and an unrejectable authentication method are needed. As one of the methods, the authentication agent the authentication agent generates coded authentication key based on algorithm generating a series of coded data impossible to reproduce. According to coding methods well known

in this field, the algorithm is generated on the basis of the authentication agent's discrimination data generated when the authentication agent is generated and discrimination data, which is input by the information consumer and will be provided later for authentication and which only the information consumer  
5 knows. The gene key generated by the above can be decoded later based on algorithm, which only the information mediator knows. According to the coded authentication key, the movement of the authentication agent can be performed also through the common e-mail system without the system of the authentication center.

10 As the other method, there is a method that the authentication key is provided from the authentication center system and only the provided authentication key is compared and authenticated by the authentication center system. Furthermore, the construction of the system can allow the authentication, effective reduce network traffic by communicating only the  
15 authentication key of the authentication agent, and make a new authentication agent through a central control. Moreover, because the authentication key is always generated through examination in the authentication center for guarantee not to have virus property.

As described above, the main function and flow of the authentication  
20 agent is described, but they are not restricted in the above and additional functions may be programmed as follows.

For means of presenting text or graphic display information of the authentication agent, a specific viewer may be used or arbitrary viewer such as a web browser supported from the consumer's device may be used. That is, data  
25 for display can be displayed through all methods reproducible by the consumer's device.

The authentication agent can have functions capable of commonly or separately communicating and all functions acceptable from the information consumer's device can perform directly or indirectly.

As a method for transmitting the authentication agent to a client, a  
5 method for transmitting to a server or the client in an attached file form through the e-mail system or a method for transmitting through the HTTP or an FTP, which are common protocol, may be adopted. However, in an aspect of the present invention, it is more preferable that the authentication agent is transmitted using communication by a VPN(Virtual Private Network) on the  
10 network and Internet in aspects of security, simplification of process and usefulness.

The VPN forms a system to independently transmit information between the authentication agencies or between the authentication agents in other user's device connected to the network and Internet by installing a management S/W  
15 (hereinafter, called "authentication agency") previously provided from the information mediator according to the demand of the information consumer. Thus, preferable movement and management system of the authentication agents can be formed.

In the information providing method according to the present invention,  
20 the role of the authentication agency may not be required. However, it is preferable to install the authentication agency in the information consumer's computer for constructing the effective system.

As shown in FIG. 8, the authentication agency 50 includes an authentication agent DB 45 for collecting and managing the software  
25 authentication agents 9, a gene key DB 47 for storing the gene authentication keys 13 generated by the authentication agents 9, which the information



consumer 2 confirms 46 and operates, and a communication part 49 for communicating with other authentication agency or authentication center 30. The authentication agency 50 can be downloaded from the central authentication data center 30 of the information mediator or installed in the information consumer's computer through medium such as a CD containing the authentication agency. The authentication agency 50 in the computer, in which the authentication agency 50 is installed, can effectively manage the authentication agents 9 according to the flow shown in FIG. 5.

First, when the authentication agent 9 reaches the information consumer's computer under the communication system, such as the Internet, capable of detecting service of the e-mail transfer system or the authentication agency 50, the authentication agency 50 promptly stores the transmitted authentication agent 9 into the authentication agent DB 45. At this time, the authentication agent 9 transmitted through e-mail 51 is stored in the authentication agent DB 45 before being opened. Of course, the authentication agents, which do not reach the authentication agency 50, may be directly performed, as shown in FIG. 7. The authentication agent 9 waiting in the authentication agent DB 45 represents each information contents 12 by the information consumer's reading 34 order, and at the same time, reproduces and separates the gene key 13 of the authentication agent 9. The separated gene key 39 serves as an electronic coin 54 and stores in the gene key DB 47 included in the authentication agency 50. If the information consumer orders the settlement 42, the gene keys 39 are sent to the authentication center 30 through the communication part 49 and transferred into cash. Meanwhile, the gene key 13 having the confirmed information contents 12 records the confirmed state and is transmitted to the authentication center 30 through the communication part 49 of the authentication

agency 50 in a state that required information is capsuled by the information consumer's recommendation transferring 56 order. The central authentication data center 30 transmits the new authentication agent to a new authentication agency or a new e-mail address through information of the transmitted gene key

5 13. The above process is carried out repeatedly. At this time, the gene keys 13 and 39 collected in the DBs 45 and 47 can be referred and transferred to a medium such as a diskette through a recording method such as file.

Besides the above brief structure of the authentication agency, the authentication agency may be programmed to have additional functions as

10 follows.

The authentication agency can provide a service such as chatting through an Internet communication infra exclusively constructed between the authentication agencies. That is, the authentication agency can perform all services programmable and applicable to communication technique based.

15 The authentication agency can provide database capable of managing and dividing the authentication agents. Preferably, if a service for reusing information contents provided to the information consumer into knowledge is provided, it will be better.

In another aspect of the present invention, the authentication agency can

20 be directly provided with only the authentication key and data having refundable and payable information from the authentication center without being provided with the authentication key of the authentication agent. The authentication key from the authentication center can be directly managed by the authentication agency in storing, keeping and transmitting the authentication key and

25 information contents, like the authentication key provided from the authentication agent. Additionally, the provided information may be managed

for reference and confirmation. The information consumer's computer, in which the authentication agency is installed, can successfully perform the objects of the present invention without the action of the authentication agent.

Referring to FIG. 9, the method of authentication and settlement by the authentication key according to the present invention will be described. As shown in FIG. 9, the authentication center 30 according to the present invention includes a database having a round DB 61 for storing template authentication agent, which is the software authentication agent, a main DB 62 for storing transfer requiring data and required information provided by the information provider for target marketing, an authentication agency DB 63 for storing the current position of the authentication agency, and a mileage DB 64 for recording and storing the information consumer's mileage, an authentication agent generating engine 65, an exclusive communication function 66 for communicating with the authentication agency and a communication function 67 for communicating with the general e-mail system.

Here, the authentication agent generating engine 65 provides the authentication key to the template authentication agent or searches the template authentication agent from the authentication key provided from the former authentication agent and provides a new authentication key. The main DB 62 stores the same authentication key as the initial or reproduced authentication agent or coded key comparable to the authentication key of the initial or reproduced authentication agent and stores peculiar properties related to the refundable or payable information of each authentication agent. The mileage DB 64 stores data, such as bank accounts, capable of confirming the accounts, which the information consumer must settle, and profit to be refunded to the consumer. The authentication key can access to the mileage DB 64 and

confirm data stored in the DB 64. The authentication agency DB 63 manages data related with a transfer time required for the exclusive communication with the authentication agency and the transfer number and the current position of the authentication agency.

5           Therefore, if the information provider orders 68 information supply from the authentication center operated by the information mediator, the software authentication agent is manufactured 69 into the contents suitable for transfer and stored in the database 61 of the authentication center as the template, which is the round software authentication agent. If the transfer requiring data with  
10 information provided by the information provider are stored in the database 62, as shown in FIG. 8, the database 62 prepares a new software authentication agent. The new software authentication agent will be transmitted to the client secured through the gene key 72 and transfer information returned into the authentication center by the information consumer's recommendation or to the  
15 client who the information provider operating the authentication center secures. After that, in case of the initial client who does not have the software authentication agency 50 shown in FIG. 8, the database 62 generates a new software authentication agent by combining the template, the gene key and transfer information, takes out a proper transfer requiring data and transmits it  
20 through the e-mail function 67. Meanwhile, in case of the client having the software authentication agency, the position found through the exclusive communication function 66 when the software authentication agency is installed is stored in the database 63. After that, transfer requiring data of the information provider is compared with the position of the software  
25 authentication agency and transmitted to the software authentication agency called the camp. At this time, if the exclusive communication does not respond

in an offline state, the communication means is converted into the e-mail transfer method. If the exclusive communication is in an online state, data is directly transmitted. If the transmission is succeeded and the client operates the software authentication agent, response 71 of the transfer success and  
5 completion of information use is sent to the authentication center. The authentication center records the responded information into the mileage DB 64 to return proper benefit to the corresponding client.

The authentication agent according to the present invention is generated in the authentication center, includes refundable and payable information and is  
10 provided with the authentication key when being generated. At this time, similar or the same authentication key is stored in the authentication center. Such authentication agents are continuously distributed to the information consumer through the e-mail system or the exclusive communication function with the authentication agency. The information consumer accumulates the  
15 refundable value. When the settlement is required, the consumer requests the settlement authentication system of the authentication center to submit the authentication key of the authentication agent and compares and confirms with the previously hold authentication key. Through the above confirmation, the refundable value accumulated in the DB can be paid. However, management  
20 of the authentication key file is responsible to the information consumer based on the provisions, like the case that the responsibility caused by loss of the information consumer's ID and password lies with the consumer. That is, as cash is discriminated through the consecutive numbers, after the value is paid through the submission of the authentication key, if there is a request of payment  
25 through the same authentication key, the request of payment must be considered as misappropriation and prevented. Meanwhile, when the payment by the

request of payment is performed, the authentication center system can totalize the payment contents to show an exposure rate of information to the information provider. Of course, the authentication center system can previously monitor supply rate and exposure rate of information through the communication  
5 function of the authentication agent and have a proper adjusting system acceptable to the information consumer. The authentication, settlement and adjustment functions of the authentication center system may be processed in separate server systems. However, the present invention is not restricted to the above embodiment that the information consumer first confirms the refundable  
10 value, accumulates it and submits the accumulated authentication keys to settle the accounts.

A flow according to the embodiment of the present invention will be described in more detail.

As shown in FIG. 10, first, the authentication agent must be previously  
15 programmed to present the information provider's information. Such program may be manufactured through a well-known method. The authentication agent is transferred and operated to the information consumer's computer, thereby representing information contents as shown in FIG. 11. The authentication agent can have additional programs and it is generally recognized from the  
20 information consumer as the electronic coin. However, it is not needed to manufacture the authentication agent to the extent of the same number required by the information provider. The reason is that since information supply demand by the same provider is the same information supply, only the authentication agent having different authentication keys is manufactured.  
25 Thus, the template authentication agent is manufactured 75 before the authentication key is provided. The template authentication agent is directly

manufactured 75 through a template authentication agent manufacturing machine provided by the information mediator. The information mediator is a businessman of the business model, transferred to the information mediator 76/77 to represent the information supply. The information provider can transfer 76/77 information 78, such as advertisement, and information 79 related to information supply such as a supply amount, supply value, etc. to a supply agency. The supply agency manufactures the authentication agent to represent the information provider. In the above process, the information provider and the information mediator make a contract 80 and computes costs of the supply representation, which will be caused later.

As shown in FIG. 12, template authentication agent is stored in a template DB 81 and a control DB 82 is constructed for controlling supply related information and action of the authentication agent. In the control DB, information of each information provider is applied according to fields, such as information type (A, B,...), value (\$1.0, -\$1.5, ...), and issue number (1000, 500, ...) in one table 83. There is a table 84 related to the above table and managing data provided to the authentication agent. The table 84 has various fields, such as related key, consecutive number, authentication key provided without a rule, confirmation of the information consumer, and recommendation number. The second table has the authentication key provided when the authentication agent is manufactured from the template authentication agent. Of course, also the manufactured 85 authentication agent 86 has its own value and authentication key. The manufactured authentication agent is provided 87 to the information consumer through the e-mail system or the communication infra constructed by the information mediator.

Here, the main role of the authentication agent is to effectively prevent

unintended transformation of the authentication key when information and the authentication key are transmitted to the information consumer. As shown in FIG. 13, the authentication agent can take different transmitting methods. A first method (A) is to transmit the authentication agent to the information consumer. A second method (B) is to send information data and authentication key data through communication between the authentication agency, which is program utility previously distributed for transmitting the authentication key to the information consumer, and the authentication center. A third method (C) is to provided the authentication key by allowing the information consumer to confirm information using the web browser on the web site operated by the authentication center. At this time, the authentication agency is installed in the information consumer's computer and operated as shown in FIG. 14. In FIG. 14, the arrow represents a dynamic movement for entering into the software authentication agency after the software authentication agent is operated. Of course, the authentication agency has additional programs and is recognized as an electronic purse.

The authentication key may be transmitted to the information consumer by the above method. Alternatively, information may be provided to the information consumer through the authentication agent, and it is processed according to the flow of FIG. 15. First, the information consumer confirms 88 information provided through the e-mail system or the exclusive communication infra previously constructed by the information mediator. At the same time, the authentication agent transforms, duplicates the hold authentication key into acceptable form and stores 89 into file. Continuously, if recommendation 90 of information circulation to other information consumer is possible, a procedure of program prepared for inputting the recommender's e-mail address is performed.



The authentication agent is returned with a list of names of the input recommenders to the authentication center according to the information consumer's transfer order. At this time, only the authentication key for discriminating the authentication agent and data of the list of recommenders  
5 input by the information consumer are transmitted. At this time, the communication protocol for the transmission is the exclusive communication means for security. The transmitted authentication key can be searched 93 in the control DB. If the authentication key is not searched, information is not manufactured and provided from the authentication center, and thus it can be  
10 invalidated 94. The searched authentication key is provided with a new authentication key from the template authentication agent DB as being recommended newly. The new authentication agent is manufactured 95 and transmitted to the recommended information consumer through the e-mail system 96. At this time, the authentication center maintains the record for  
15 paying additional cost of the information circulation to the former information consumer 97.

As shown in FIG. 16, the information consumer transmits or submits the authentication key file 98 provided by the authentication agent. FIG. 16 illustrates a state that when information consumer operates the software  
20 authentication agent and information is consumed, the authentication agent inputs required information for changing the gene key divided from the authentication agent (in the drawing, named as reserve authentication key) to cash on the web site and the reserved gene keys are transmitted. As shown in FIG. 17, the submitted authentication key is researched in the control DB. If  
25 not researched, the authentication key is invalidated. Because the authentication key is always peculiar by information type every authentication

agent, authentication agent is not duplicated and cannot be misappropriated because being data, which only the authentication center can know. Continuously, since there is possibility that the former settlement is provided again to the information consumer, the authentication agent verifies 112 whether  
5 or not the data is settled beforehand. If the verification is passed well, the authentication agent determines as a normal condition for the settlement and confirms 113 in the settlement confirmation field not to request resettlement. Finally, the information consumer receives the cost according to a common account transfer procedure 114.

10

### **Industrial Applicability**

As described above, the settlement authentication system guaranteeing payment of cost, that the information consumer has consumed and circulated,  
15 without outflow of private information besides opened e-mail in the Internet environment can be constructed. Moreover, because the company can confirm how many times information is exposed to the information consumer, the information mediator can provide objective data to the company and the company can pay the agent cost to the information mediator. Additionally, the  
20 authentication agent can safely move to the recommended place.

While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the embodiments but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and  
25 spirit of the present invention.

**What Is Claimed Is:**

1. An information providing method for authenticating in place of an information consumer under a security maintaining condition without exposing  
5 the information consumer's private information through an authentication agent having information contents and an authentication key as a software agent when an information mediator provides information contents, which are requested by an information provider, to the information consumer under network based.

10 2. The information providing method according to claim 1, wherein the authentication agent is transmitted to the information consumer from a central authentication data center operated by the information mediator on the network through a transfer type method using an e-mail system.

15 3. The information providing method according to claim 1, wherein the authentication agent is transmitted to the information consumer through an access type method downloading from a web site provided from the central authentication data center.

20 4. The information providing method according to claim 1, wherein the authentication agent includes:

a data division having information contents consumed by the information consumer and a gene key, which is a series of data aggregate having uniqueness as an authentication key, divided from the information contents when being  
25 confirmed by the information consumer; and

a function part having a display part for displaying the information

contents to the information consumer, a separate processing part for separating the gene key from the information contents, and a communication processing part for communicating with the information mediator on the network.

5           5.           The information providing method according to claim 1, wherein the method for authenticating in place of an information consumer includes the steps of:

                  previously recording data of the authentication agent in a control DB of the central authentication data center;

10           transmitting the authentication agent to the information consumer through the authentication center;

                  operating the authentication agent in the information consumer's computer according to the information consumer's reading order and dividing the authentication agent into information contents and the gene key;

15           allowing the consumption of information by confirming the divided information contents to the information consumer; transmitting the divided and confirmed the gene key to the authentication center using the communication processing part; and

                  storing the gene key in a main DB of the authentication center.

20

                  6.   The information providing method according to claim 1, wherein the method for authenticating in place of an information consumer further includes the steps of searching the gene keys through the control DB of the central authentication data center and storing only the gene keys passed in the search  
25   into the main DB, before storing the gene keys into the main DB.

7. The information providing method according to claim 5, wherein the method for paying cost of information confirmation of the information consumer includes the steps:

reproducing gene key from the transmitted authentication agent and  
5 generating the same gene key;

recording the reproduced gene key in the information consumer's computer; sending the reproduced gene key having additional data required for settlement to the authentication center;

searching the reproduced gene key through the control DB in the  
10 authentication center;

verifying in the control DB whether or not the searched gene key has been settled beforehand;

confirming the gene key for preventing resettlement if the gene key is not settled beforehand; and

15 performing the settlement of the gene key.

8. The information providing method according to claim 5, wherein if the information consumer wants the recommendation of the information contents, the method for authenticating in place of an information  
20 consumer includes the steps of:

inputting a recommended consumer's data into the gene key;

returning the gene key to the authentication center through the communication processing part;

searching the gene key through the control DB;

25 manufacturing the gene key determined as a normal condition into a new authentication agent by a new gene key provided from a template authentication

agent DB;

transmitting the new authentication agent to a recommended address according to the recommended consumer's data; and

5 recording the recommended fact through the authentication center to pay the cost of information circulation to the information consumer.

9. The information providing method according to claim 1, further comprising a software authentication agency provided from the information mediator to the information consumer and managing the authentication agent.

10

10. The information providing method according to claim 9, wherein the authentication agency includes an authentication agent DB for storing the authentication agents, a gene key DB for storing the gene keys manufactured by the authentication agent confirmed and operated by the information consumer, 15 and a communication part for communicating with the central authentication data center operated by other authentication agency or the information mediator on the network.

11. The information providing method according to claim 9, 20 wherein the method for authenticating in place of an information consumer includes the steps of:

transmitting the authentication agency to the information consumer on online/offline;

transmitting the authentication agent to the information agent's address 25 stored in the authentication agency DB of the authentication center through the network when the authentication agency is installed;

storing the authentication agent in the authentication agent DB;

operating the authentication agent in the information consumer's computer according to the information consumer's reading order and dividing the authentication agent into the information contents and the gene key;

5       allowing consumption of information by confirming the information contents to the information consumer;

transmitting the confirmed gene key to the authentication center using the communication part; and

10       storing the transmitted gene key into the main DB of the authentication center.

12.       The information providing method according to claim 9, wherein the method for authenticating in place of an information consumer includes the steps of:

15       transmitting the authentication agency to the information consumer on online/offline;

transmitting the information contents and the gene key to the information agent's address stored in the authentication agency DB of the authentication center through the network when the authentication agency is installed;

20       storing the transmitted gene key in the gene key DB;

allowing consumption of information by confirming the information contents to the information consumer;

transmitting the confirmed gene key to the authentication center using the communication part; and

25       storing the transmitted gene key into the main DB of the authentication center.

13. The information providing method according to claim 9, wherein the method for authenticating in place of an information consumer further includes the steps of: searching the gene key through the control DB of the central authentication data center before storing the gene key in the main DB and storing only searched and passed gene key in the main DB.

14. The information providing method according to claim 9, wherein the method for paying cost of information confirmation of the information consumer includes the steps:

reproducing gene key from the transmitted authentication agent and generating the same gene key;

storing the reproduced gene key in the gene key DB to be inquired in an electronic coin type;

15 sending the reproduced gene key having additional data required for settlement to the authentication center through the communication part;

searching the reproduced gene key through the control DB in the authentication center;

20 verifying in the control DB whether or not the searched gene key has been settled beforehand; and

confirming the gene key for preventing resettlement if the gene key is not settled beforehand and performing the settlement of the gene key.

15. The information providing method according to claim 14, wherein in the gene key storing step, the gene key stored in the gene key DB can be transmitted to the authentication center using a medium such as a diskette on



offline.

16. The information providing method according to claim 9, wherein if the information consumer wants the recommendation of the information contents, the method for authenticating in place of an information consumer includes the steps of:

inputting a recommended consumer's data into the gene key; returning the gene key to the authentication center through the communication processing part;

10 searching the gene key through the control DB;

manufacturing the gene key determined as a normal condition into a new authentication agent by a new gene key provided from a template authentication agent DB; transmitting the new authentication agent to a recommended address according to the recommended consumer's data; and

15 recording the recommended fact through the authentication center to pay the cost of information circulation to the information consumer.

17. The information providing method according to claim 2, wherein the central authentication data center includes: a database having a DB for storing template authentication agent, a main DB for storing the information contents and required information, an authentication agency DB for storing information related to the authentication agency, and a mileage DB for recording and storing the information consumer's mileage; an authentication agent generating engine, communication functions for communicating with the authentication agency or the e-mail system.

18. The information providing method according to one of claims 1, 2, 4, 10, 11, 12 and 17, wherein the network allows the information provider and the information mediator to transmit message and executable program and is based on one-way or two-way wire/wireless communication using a standard or  
5 exclusive protocol, which the information consumer can receive.

19. The information providing method according to one of claims 1, 2, 4 and 17, wherein the network includes a common network such as the Internet and an exclusive network.

10

20. The information providing method according to one of claims 10, 11 and 12, wherein the network includes an exclusive network.

21. The information providing method according to one of claims 1, 4,  
15 5, 8, 11, 12, 16 and 17, wherein the information contents is refundable information for paying the cost of confirmation of the information consumer.

22. The information providing method according to claim 21, wherein the information contents is refundable advertisement.

20

23. The information providing method according to claim 21, wherein the information contents is refundable search information.

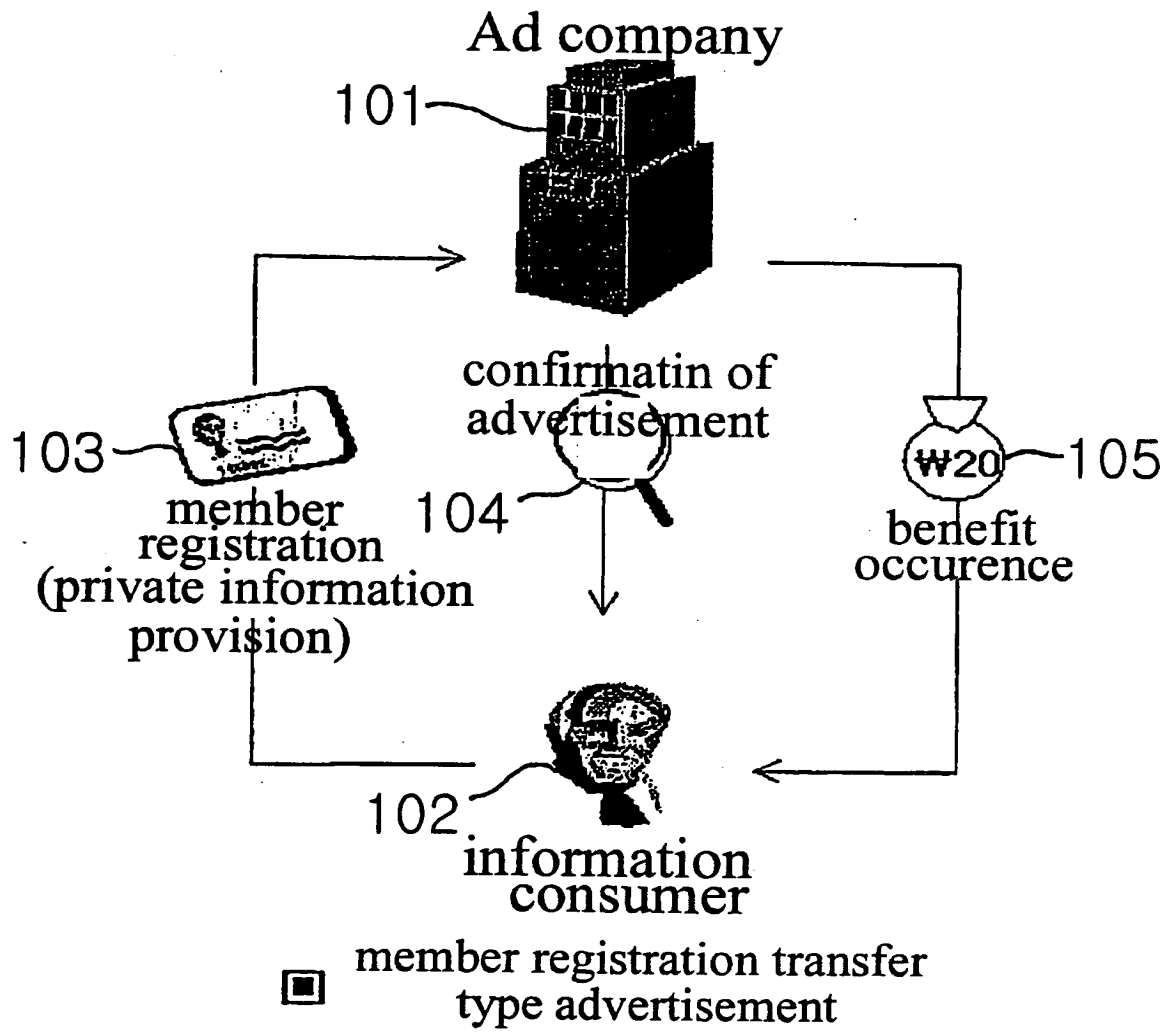
24. The information providing method according to claim 21, wherein  
25 the refundable search information is refundable question paper search information carried out by a research agency.

25. The information providing method according to one of claims 1, 4,  
5, 8, 11, 12, 16 and 17, wherein the information contents is payable information  
inducing payment of a cost that the information consumer has confirmed the  
5 information contents.

26. The information providing method according to claim 25, wherein  
the information contents is payable goods information capable of selling through  
an electronic commerce including information goods.

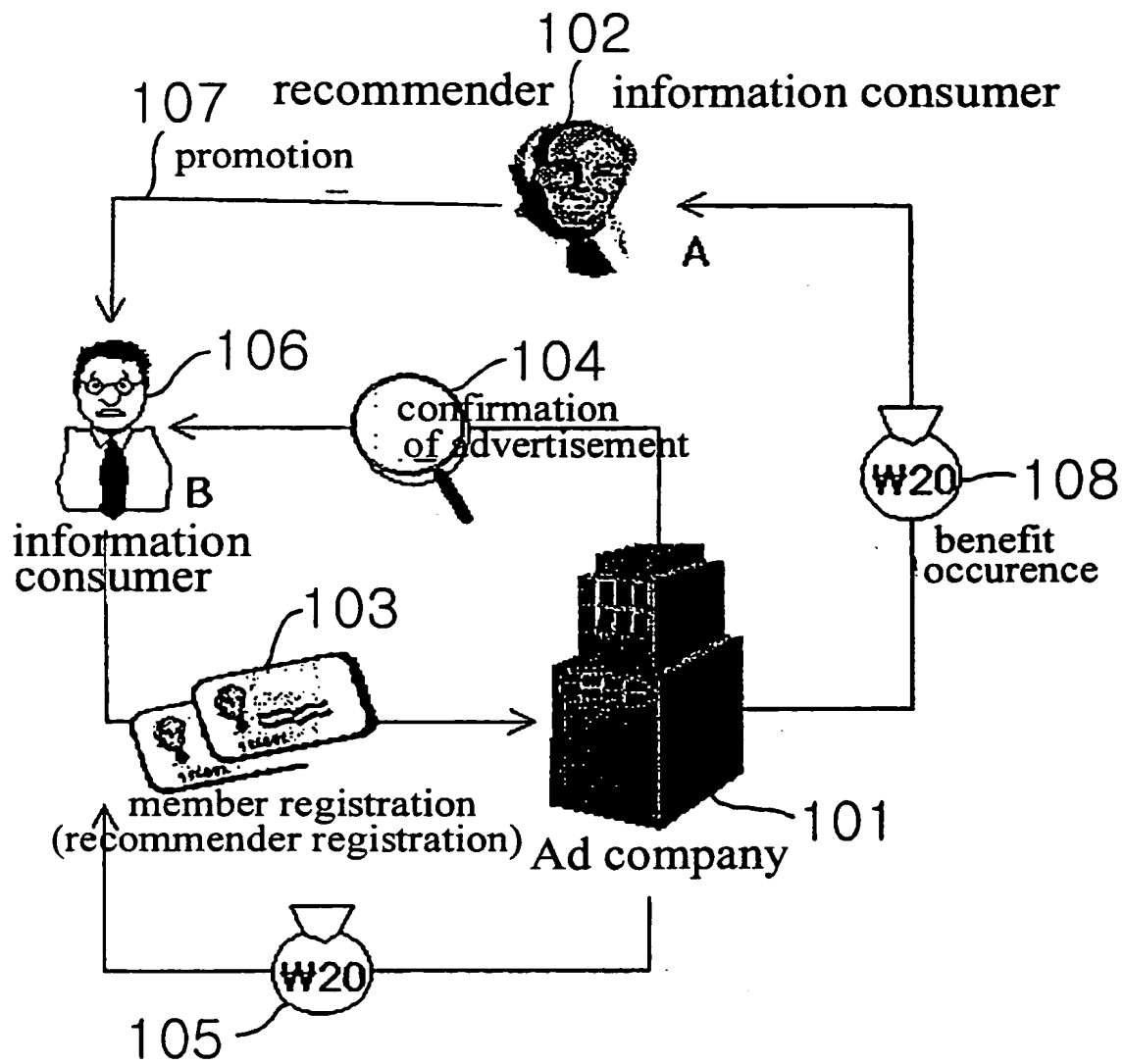
1 / 17

Fig 1.



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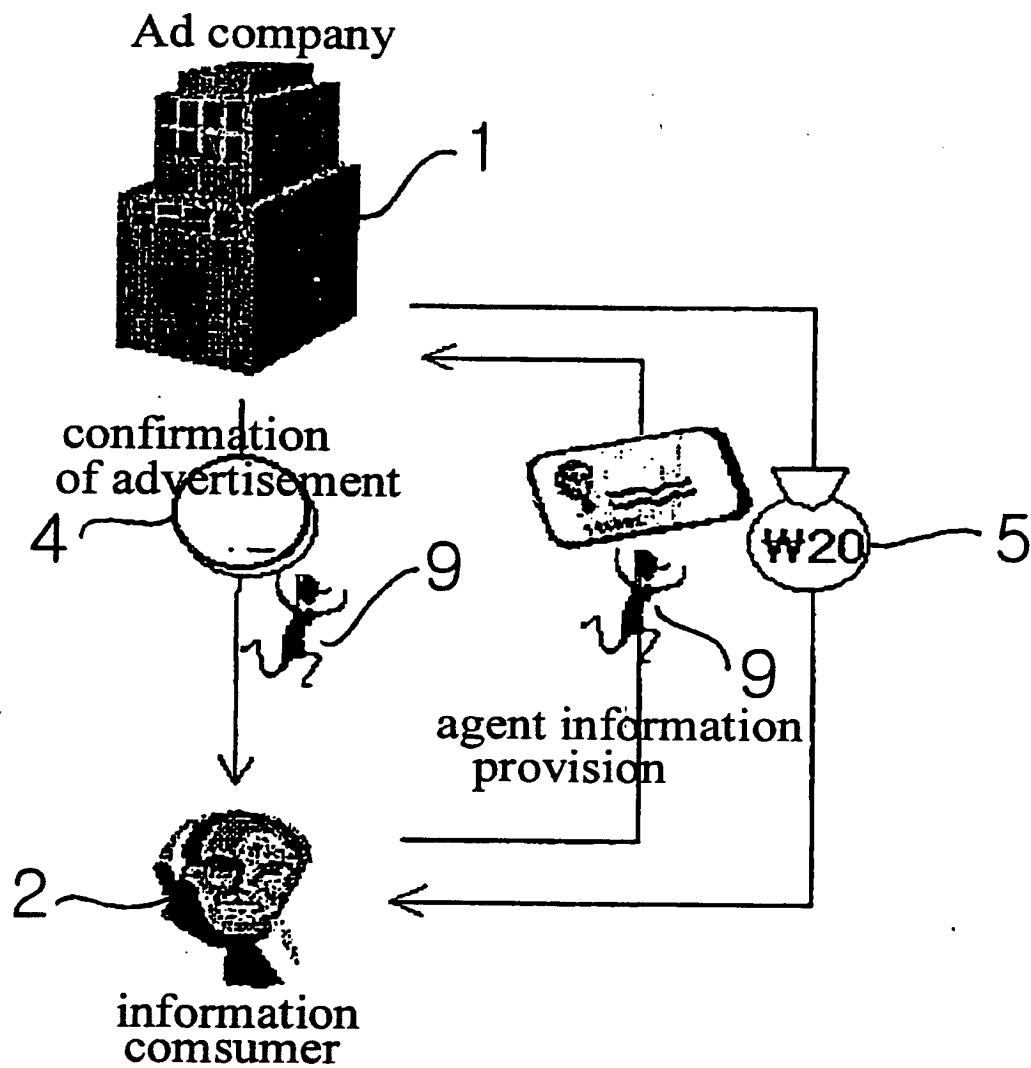
Fig 2.



■ later-recommendation compensation

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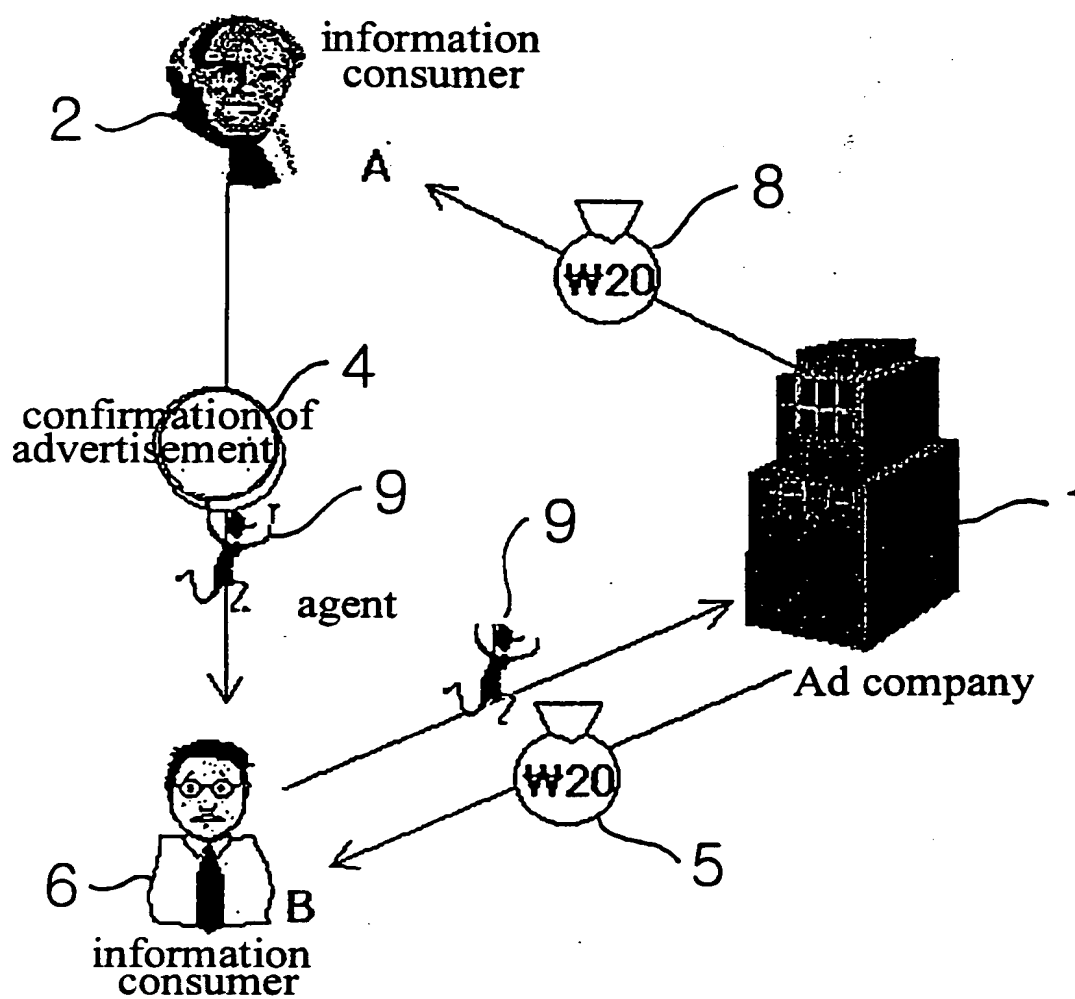
Fig 3.



□ agent transfer type advertisement

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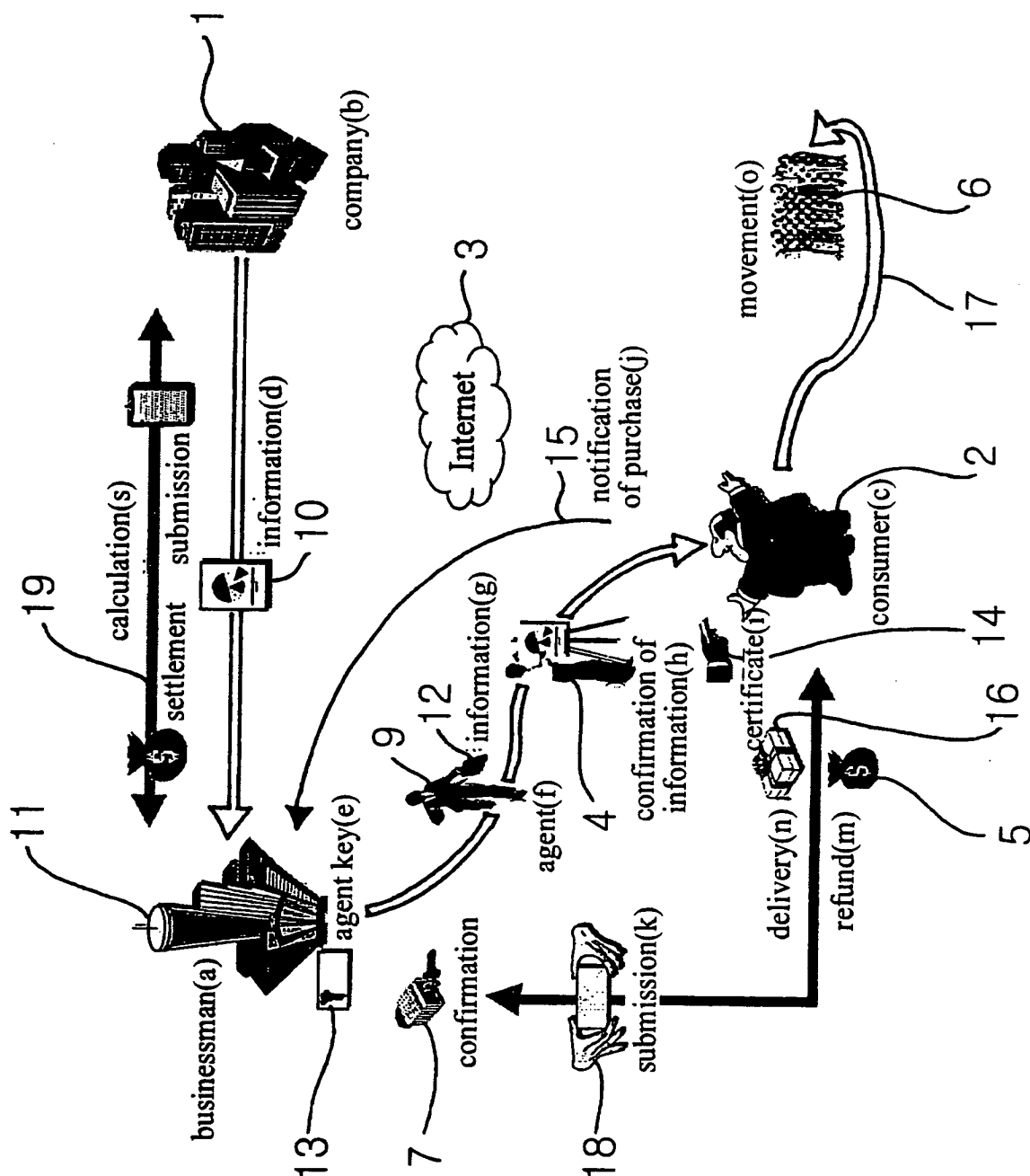
Fig 4.



■ advance-recommendation compensation

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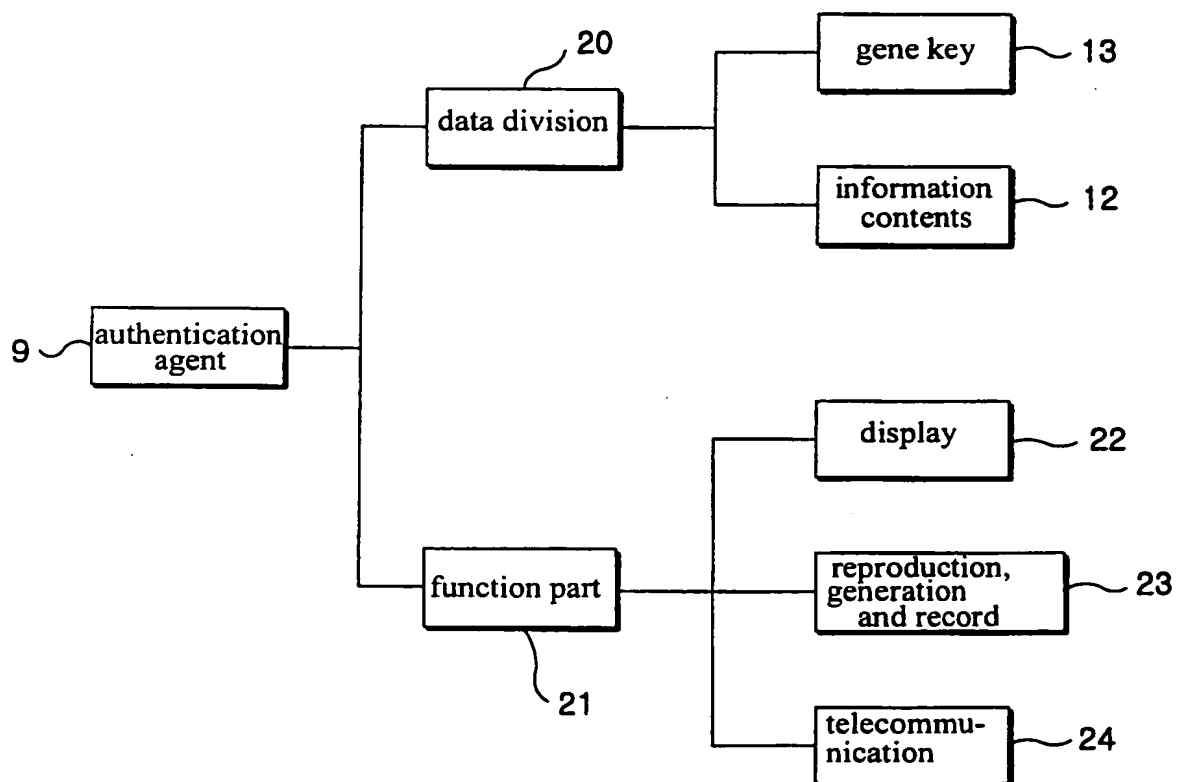
Fig 5.





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Fig 6.



7/17

Fig 7.

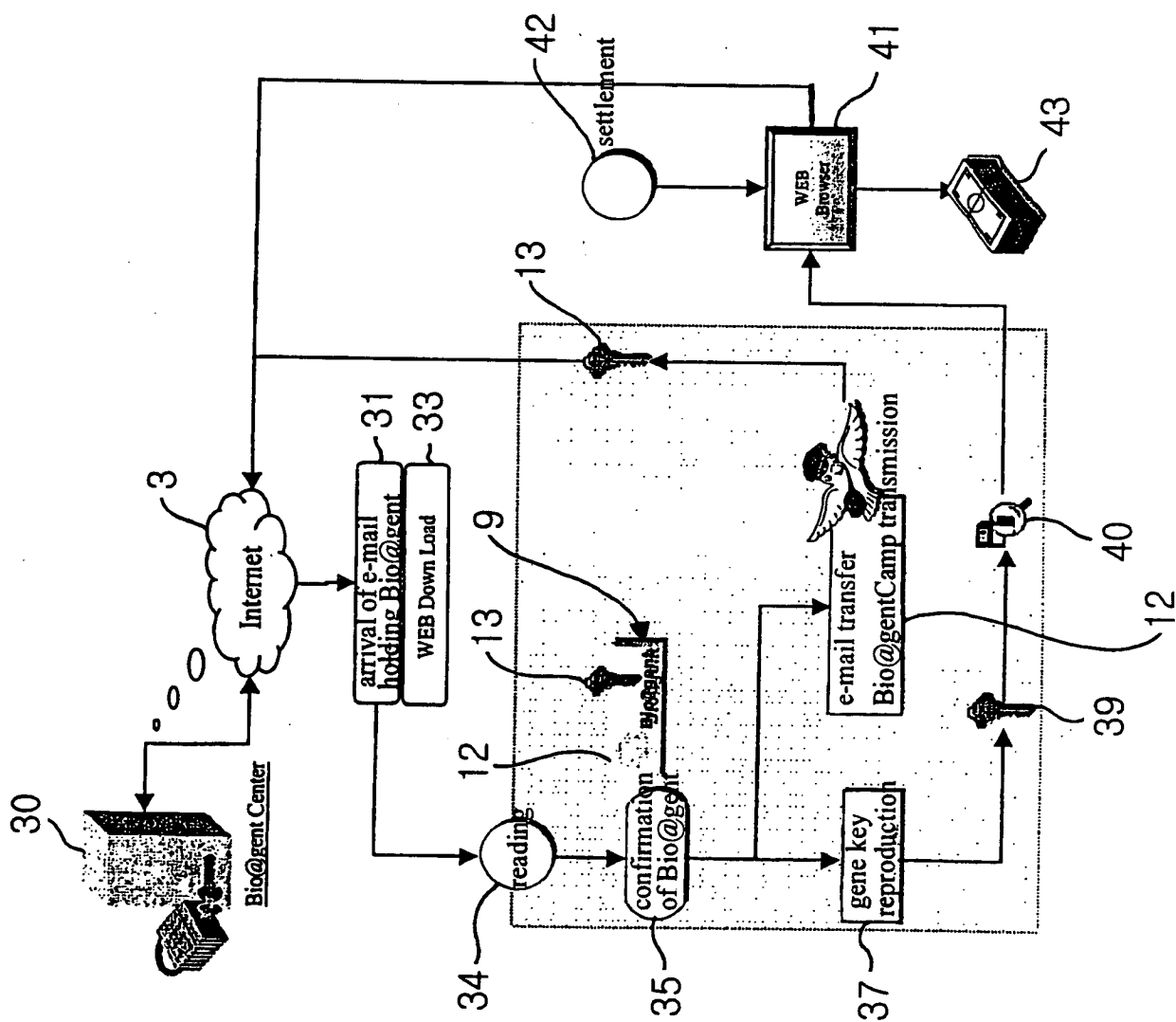


Fig 8.

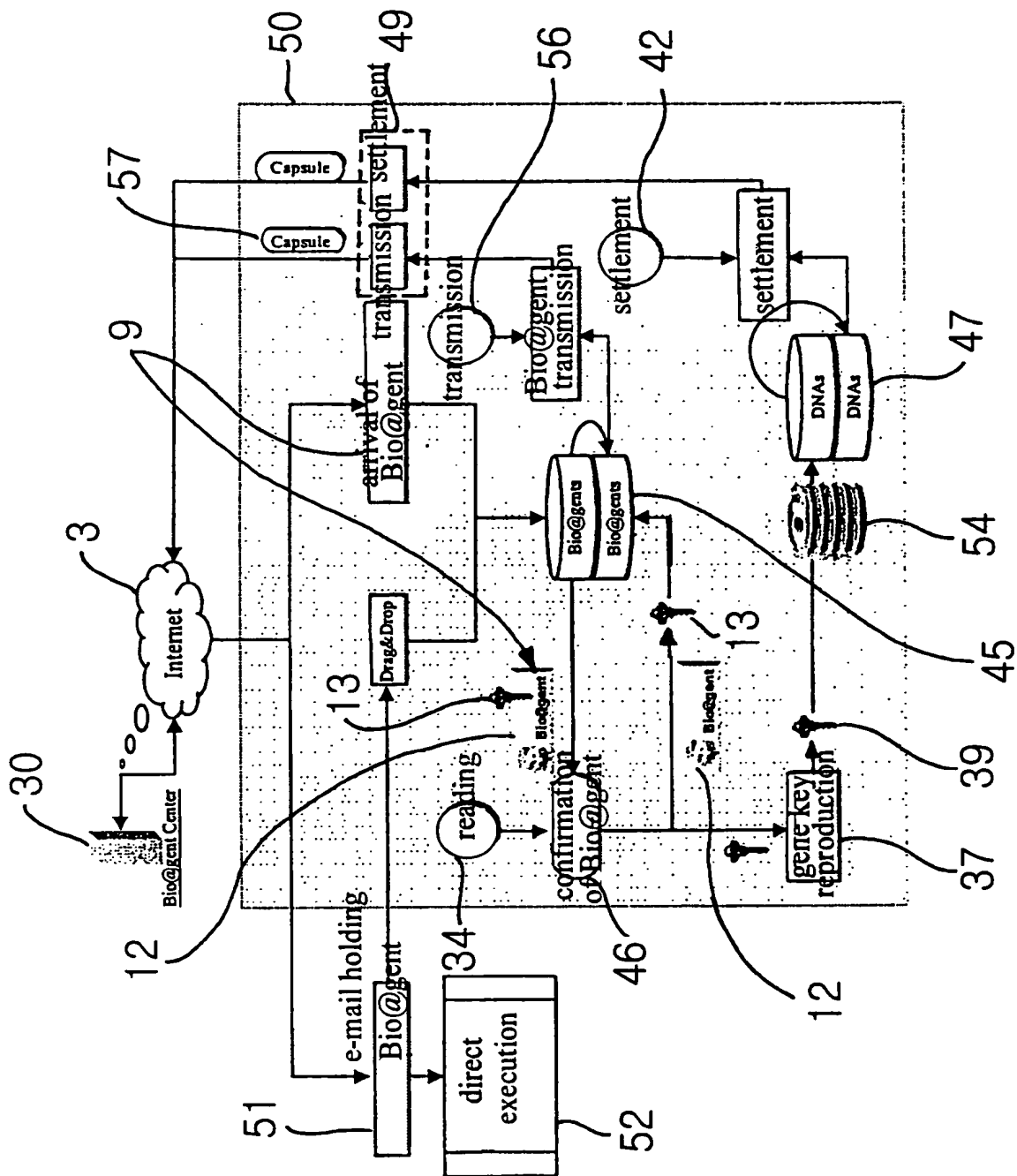


Fig 9.

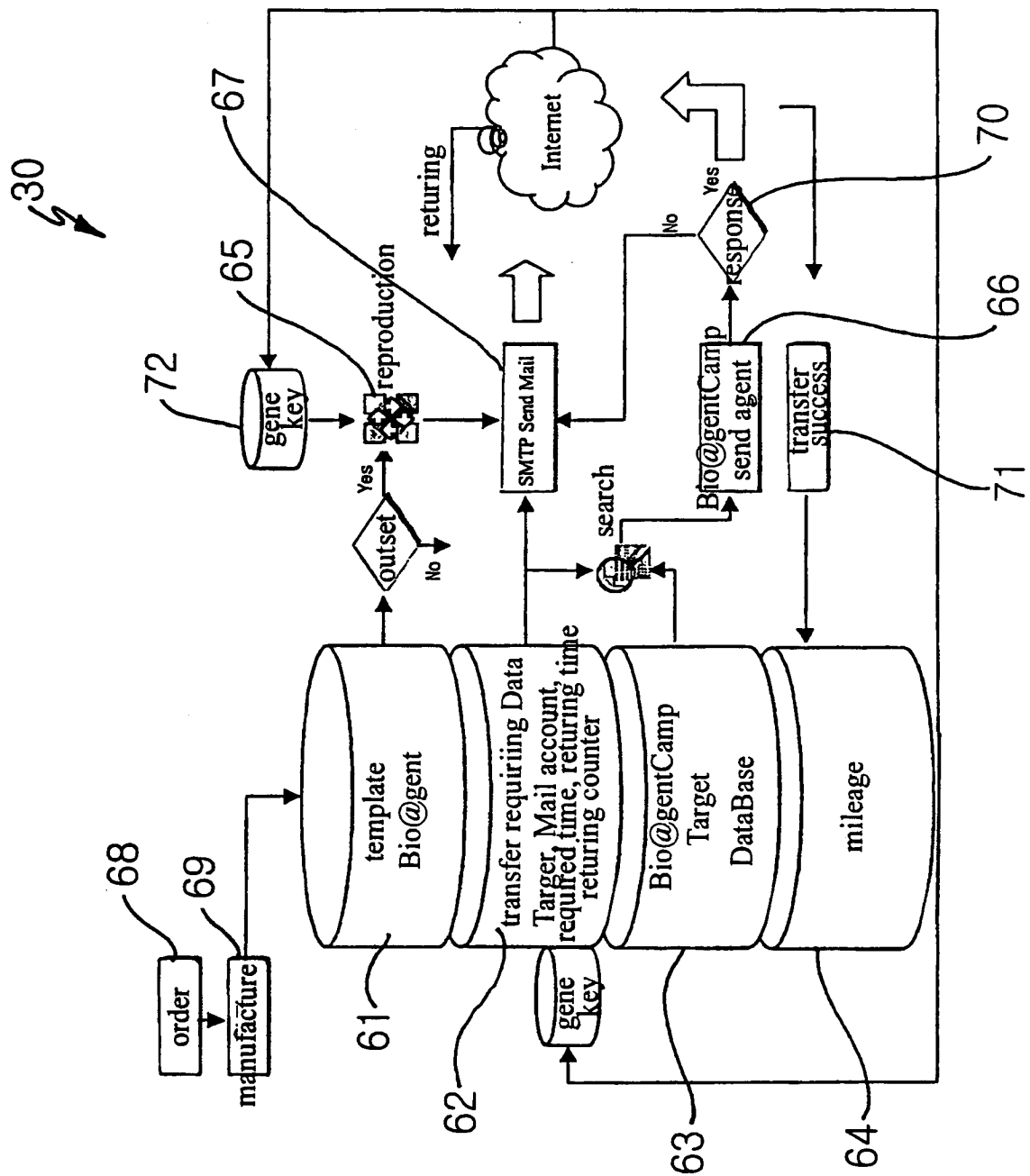


Fig 10.

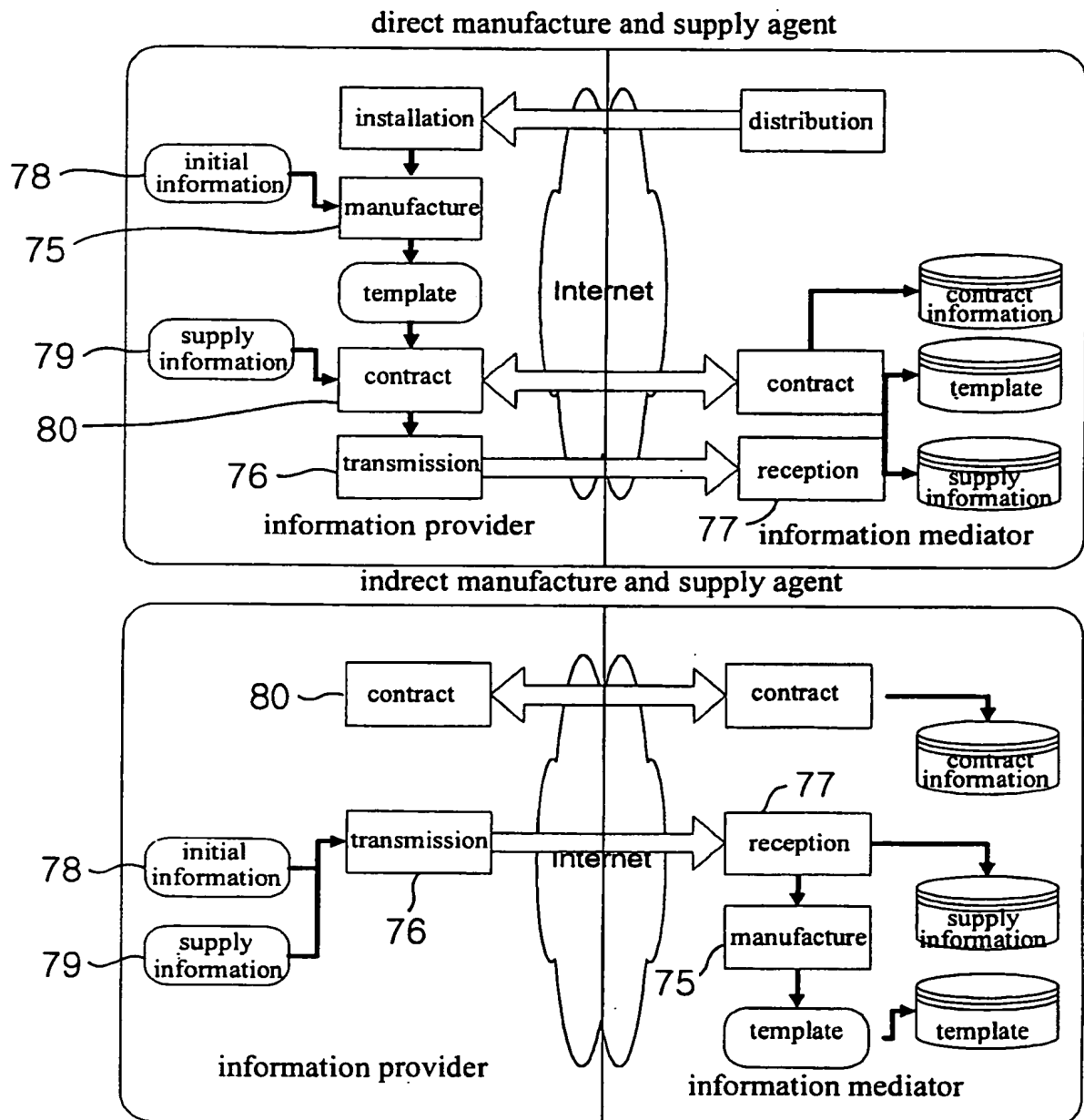


Fig 11.

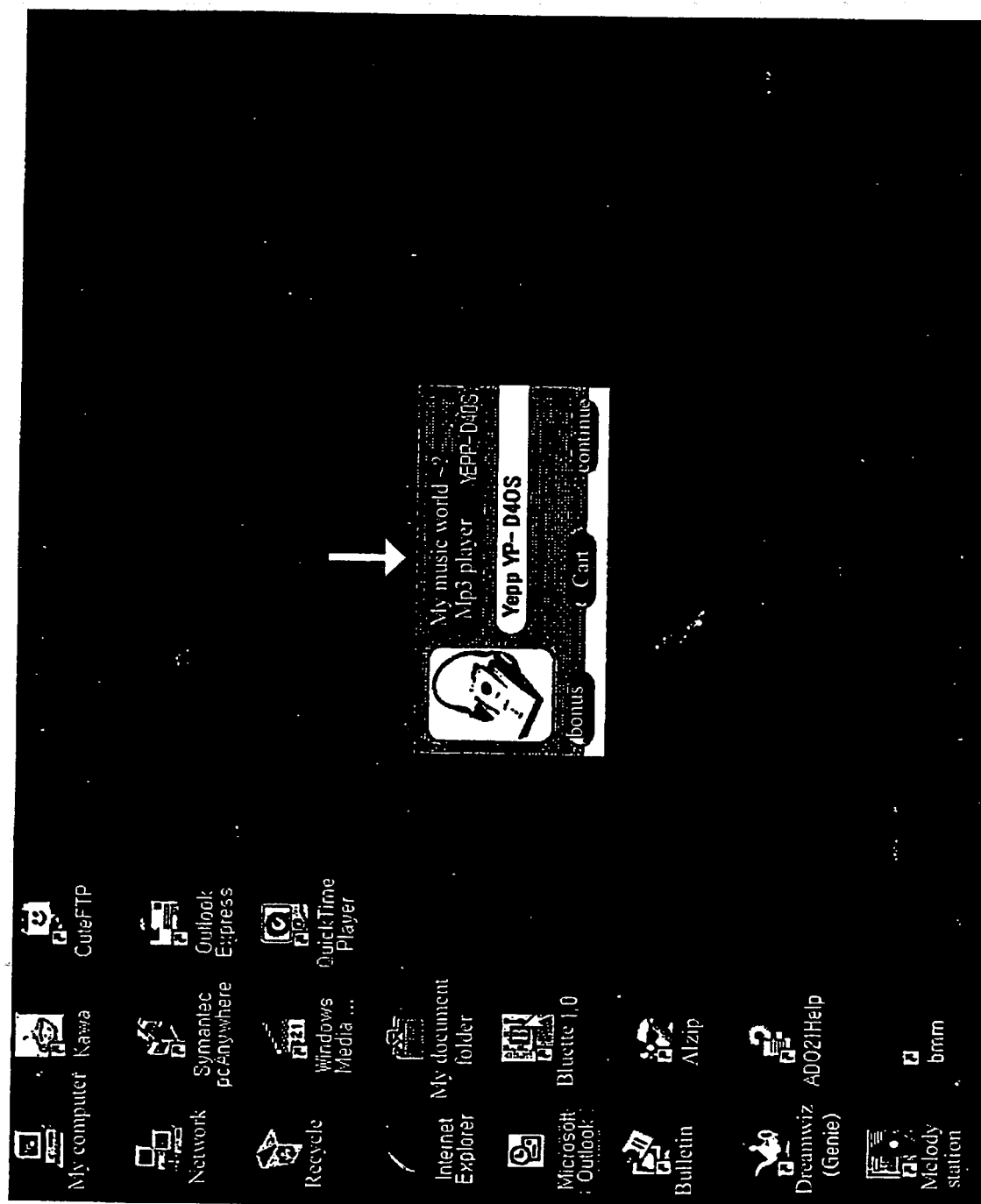


Fig 12.

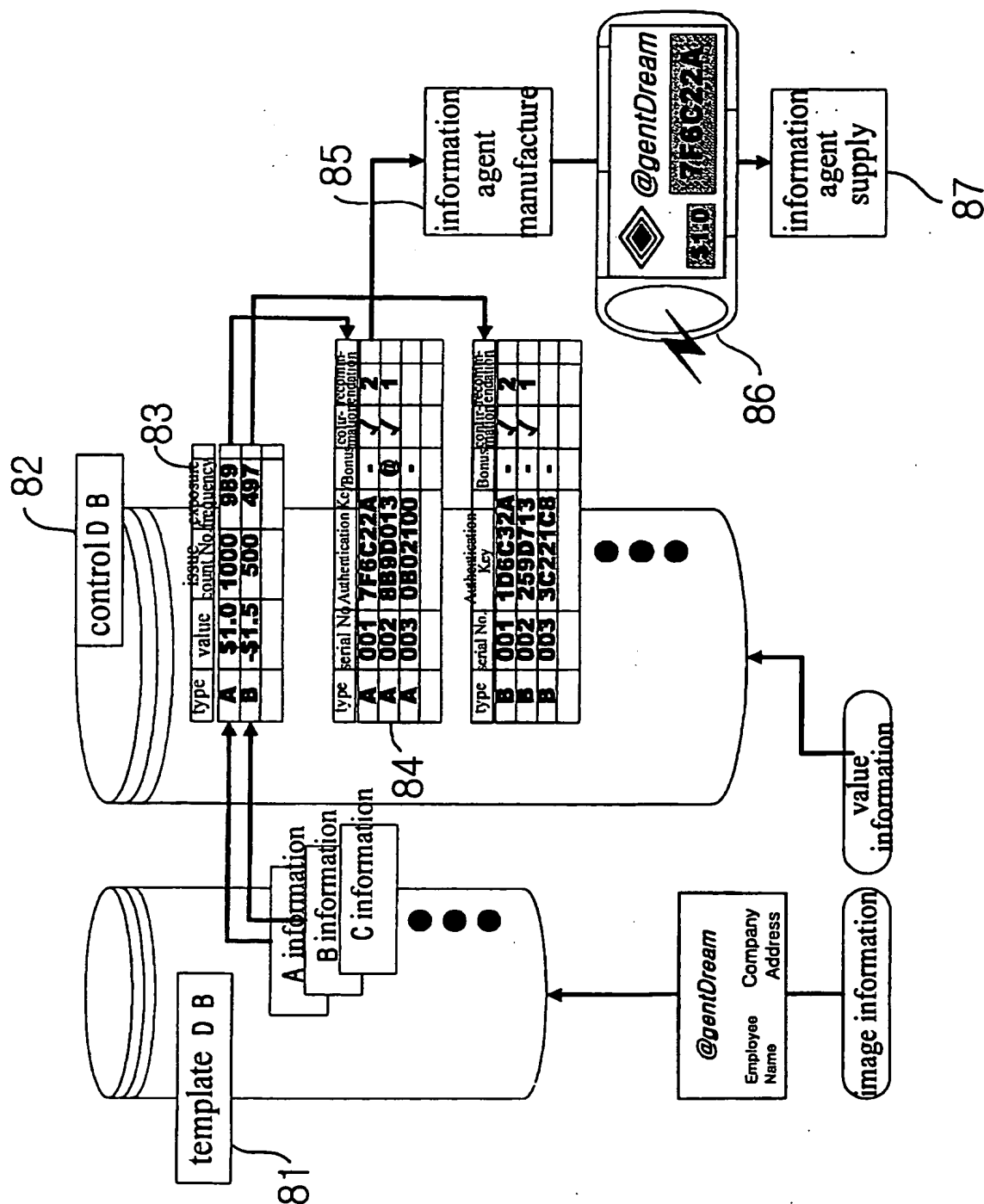
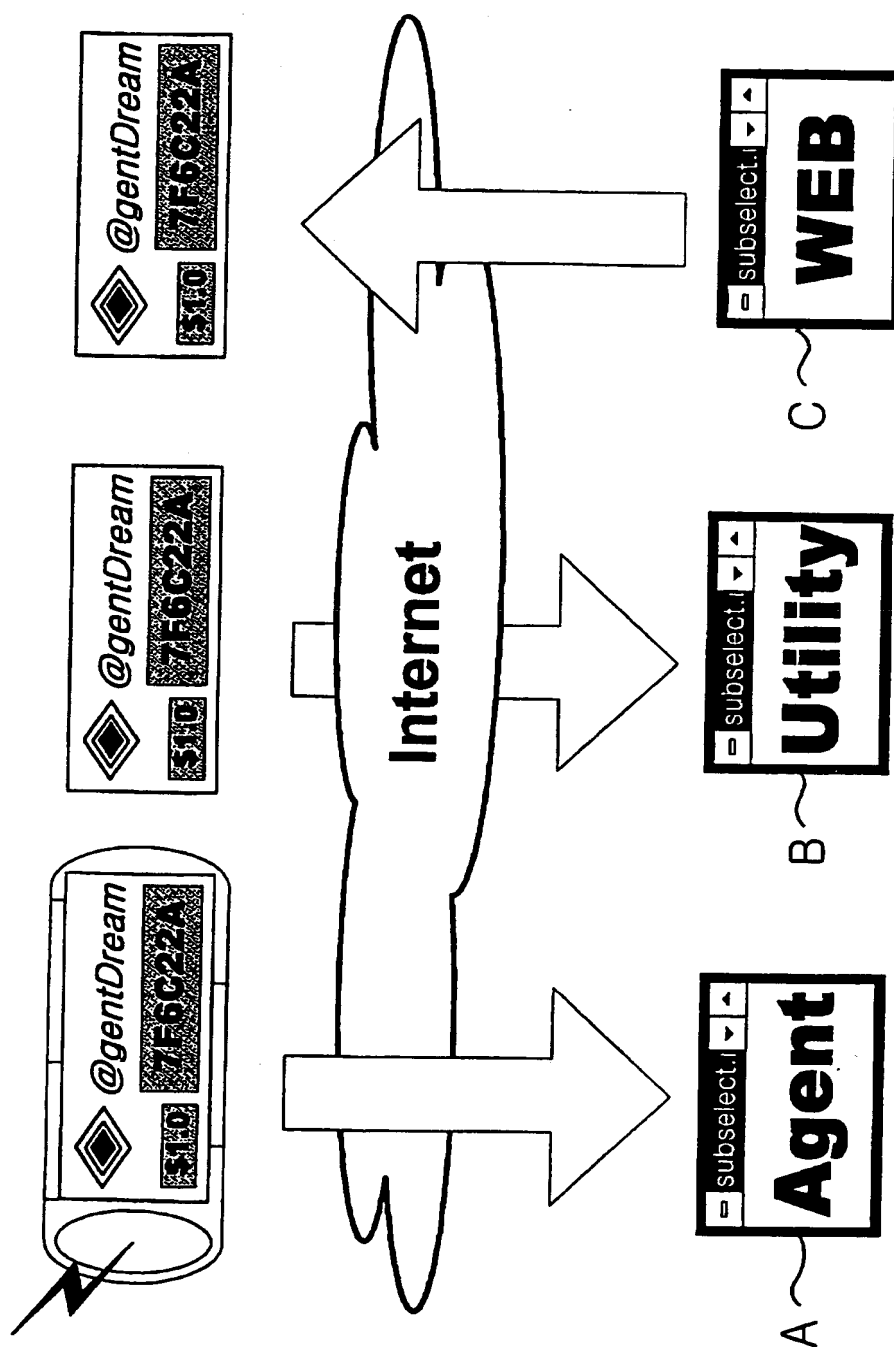


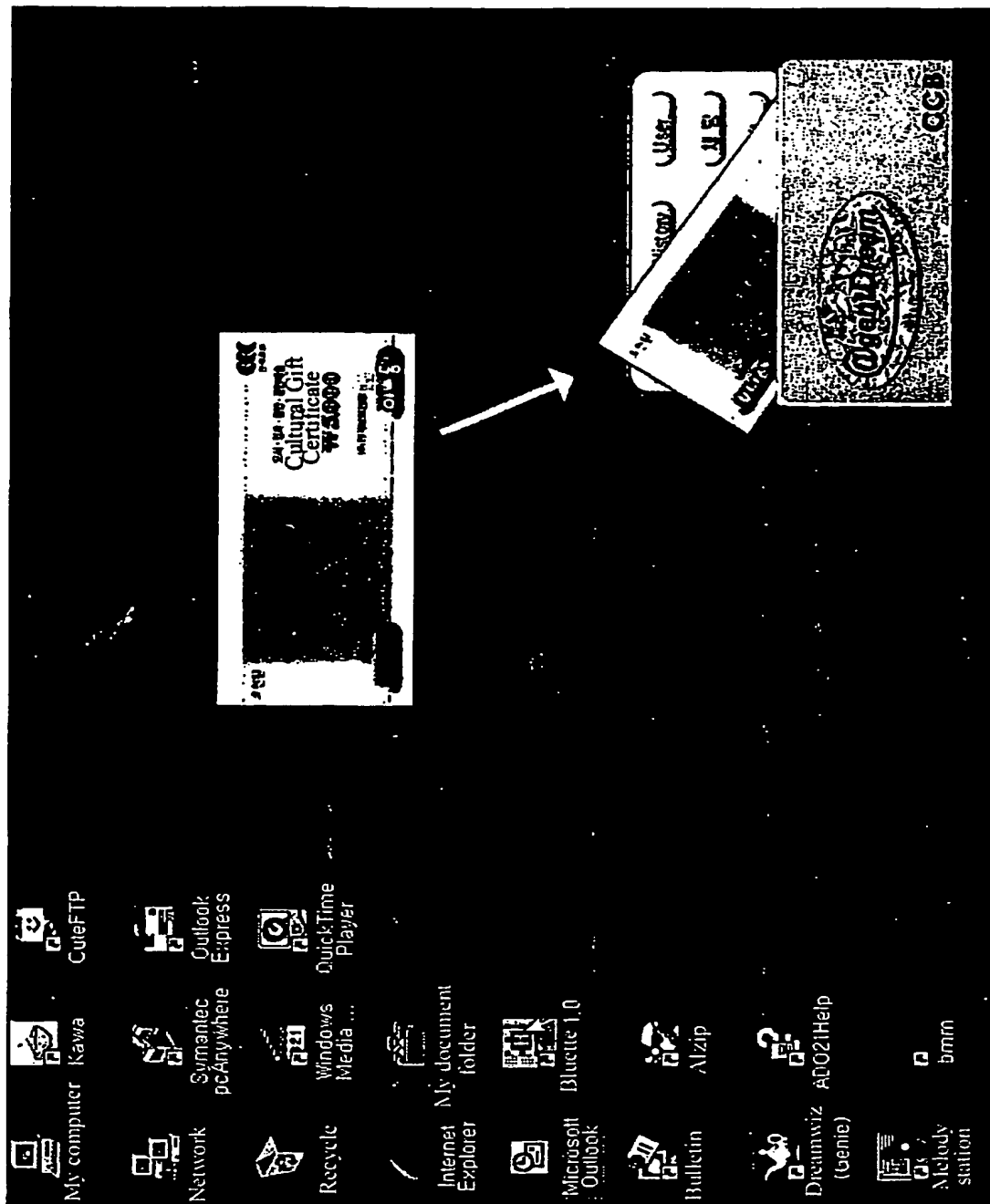
Fig 13.





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Fig 14.



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